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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,061	02/13/2004	Youji Kawahara	Q78664	5635

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EXAMINER

MCKINNON, TERRELL L

ART UNIT PAPER NUMBER

3753

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,061

Applicant(s)

KAWAHARA ET AL.

Examiner

Terrell L. Mckinnon

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Receipt is acknowledged of applicant's amendment filed January 16, 2006. Claim 6 has been canceled without prejudice. Claims 1-5 and 7-18 are pending and an action on the merits is as follows.

Applicant's arguments with respect to claims 1-5 and 7-18 have been considered but are moot in view of the following grounds of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al. (U.S. 4,046,190) in view of Eastman (U.S. 4,274,479).

Marcus discloses a plate type heat pipe comprising:

- a condensable, liquid phase working fluid encapsulated in a container sealed in an air-tight condition and a wick provided in the container composed of a porous body;
- a part of the container functioning as the evaporating part;
- another part of the container functions as a condensing part;

- the container is constructed to have a flat thin-shaped section comprising a top face and a bottom face;
- a direct reflux flow passage has a flow cross-sectional area greater than that of a cavity formed in a wick;
- the direct reflux flow passage is formed from the condensing part to the evaporating part in the container and wherein the direct reflux flow passage is formed between the porous body and an inner face of the container where the porous body is mounted;
- the direct reflux flow passage includes a plurality of flow paths extending from the evaporating part to a plurality of portions on the side of the condensing part;
- wherein a cross- sectional shape of the direct reflux flow passage is selected from the group consisting of a triangular shape, a circular shape, a trapezoidal shape, a semicircular shape, and a square shape; and
- the inputted heat from outside to the evaporating part is 25 to 45 Watts.

Marcus's invention discloses all of the claimed limitations from above except for the porous body is a sheet arranged on the bottom face of the container; the direct reflux flow passage includes a thin slit or thin slits formed on the surface of the porous body; a clearance between the thin slits in the width direction of the porous body changes flexibly in accordance with the width of the porous body; the direct reflux flow passage comprises a concave slit formed on the surface of the porous body disposed opposite to a concave slit formed on the inner face of the container; and the wick is composed of a

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porous sintered compact and its material is copper powder or ceramic powder.

3. However, Eastman teaches a porous body is a sheet arranged on the bottom face of the container (column 4, lines 24-37); the direct reflux flow passage includes a thin slit or thin slits (34) formed on the surface of the porous body; a clearance between the thin slits in the width direction of the porous body changes flexibly in accordance with the width of the porous body (column 2, lines 27-35); the wick is composed of a porous sintered compact and its material is copper powder or ceramic powder; and the use of covering the capillary grooves which are normally provided on the inner surface of the tubular member (column 1; lines 5-15).

Given the teachings of Eastman, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the plate type heat pipe of Marcus with porous body being a sheet arranged on the bottom face of the container; the direct reflux flow passage includes a thin slit or thin slits formed on the surface of the porous body; a clearance between the thin slits in the width direction of the porous body changes flexibly in accordance with the width of the porous body; and the wick is composed of a porous sintered compact and its material is copper powder or ceramic powder.

Doing so would improve the heat transferring ability of the heat pipe.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al. (U.S. 4,046,190) in view of Eastman (U.S. 4,274,479) as applied to claims above, and further in view of Kroliczek et al. (U.S. 6,382,309).

Marcus's invention as modified by Eastman, discloses all of the claimed limitations from above except for the direct reflux flow passage comprising a concave slit formed on the surface of the porous body sheet disposed opposite to a concave slit formed on the inner face of the container.

5. However, Kroliczek teaches the use of a direct reflux flow passage comprising concave slit formed on the surface of the porous body sheet disposed on the inner face of the container.

Doing so would provide an alternate arrangement for providing vapor channels within a wick for efficiently cooling heat-generating devices.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al. (U.S. 4,046,190) in view of Eastman (U.S. 4,274,479) as applied to claims above, and further in view of Del Bagno et al. (U.S. 4,489,777).

Marcus's invention as modified by Eastman, discloses all of the claimed limitations from above except for a clearance between the plurality of flow paths on the evaporating part side is wider than that on the condensing part side in connection with that the width of the wick is wider on the evaporating part side, in order to arrange the reflux flow passages evenly in the width direction of the wick.

7. However, Del Bagno teaches heat pipes having multiple integral wick structures, wherein a clearance between the plurality of flow paths on the evaporating part side is wider than that on the condensing part side in connection with that the width of the wick is wider on the evaporating part side, in order to arrange the reflux flow passages evenly in the width direction of the wick.

Given the teachings of Del Bagno, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the flat heat pipe of Marcus with a clearance between the plurality of flow paths on the evaporating part side is wider than that on the condensing part side in connection with that the width of the wick is wider on the evaporating part side, in order to arrange the reflux flow passages evenly in the width direction of the wick.

Doing so would provide enhance capillary action to improve heat dissipation.

Response to Arguments

Applicant's arguments filed January 16, 2006 have been fully considered but they are not persuasive.

Applicant's states, Marcus discloses a flat-type heat pipe structure, one skilled in the art would not be motivated to apply elements of Eastman's structurally distinguishable circular heat pipe structure thereto. Thus, a skilled artisan would not be motivated to combine these disclosures to achieve the present invention.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Ex parte Masham, 2 USPQ2d 1647 (1987).

In response to Applicant's argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184

USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971). references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. In re Bozek, 163 USPQ 545 (CCPA) 1969. In this case, all the cited art relates to heat pipes with like parts performing the same function, and a difference in shape or size does not carry any patentable weight.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L. Mckinnon whose telephone number is 571-272-4797. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on 571-272-4930. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terrell L Mckinnon
Primary Examiner
Art Unit 3753
April 3, 2006